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PRE-APPEAL BRIEF REQUEST FOR REVIEW		Docket Number (Optional) 006401.00415													
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First Named Inventor Helene G. Bazin															
Art Unit 1642		Examiner Franciso Chandler Prats													
<p>Applicant requests review of the final rejection in the above-identified application. No amendments are being filed with this request.</p> <p>This request is being filed with a notice of appeal.</p> <p>The review is requested for the reason(s) stated on the attached sheet(s). Note: No more than five (5) pages may be provided.</p> <p>I am the</p> <table style="width: 100%;"> <tr> <td style="width: 50%; vertical-align: top;"> <input type="checkbox"/> applicant/inventor. <input type="checkbox"/> assignee of record of the entire interest. See 37 CFR 3.71. Statement under 37 CFR 3.73(b) is enclosed. (Form PTO/SB/98) <input checked="" type="checkbox"/> attorney or agent of record. Registration number <u>37,354</u> </td> <td style="width: 50%; vertical-align: top;"> <u>/Allen E. Hoover/</u> Signature <u>Allen E. Hoover</u> Typed or printed name <u>312-463-5000</u> Telephone number <u>July 20, 2006</u> Date </td> </tr> </table> <p><input type="checkbox"/> attorney or agent acting under 37 CFR 1.34. Registration number if acting under 37 CFR 1.34 _____</p> <p>NOTE: Signatures of all the inventors or assignees of record of the entire interest or their representative(s) are required. Submit multiple forms if more than one signature is required, see below*.</p>				<input type="checkbox"/> applicant/inventor. <input type="checkbox"/> assignee of record of the entire interest. See 37 CFR 3.71. Statement under 37 CFR 3.73(b) is enclosed. (Form PTO/SB/98) <input checked="" type="checkbox"/> attorney or agent of record. Registration number <u>37,354</u>	<u>/Allen E. Hoover/</u> Signature <u>Allen E. Hoover</u> Typed or printed name <u>312-463-5000</u> Telephone number <u>July 20, 2006</u> Date										
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<input type="checkbox"/> *Total of _____ forms are submitted.															

This collection of information is required by 35 U.S.C. 132. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11, 1.14 and 41.6. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Mail Stop AF, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

(Attorney Docket No. 006401.00415)

In re U.S. Patent Application of)	
Bazin et al.)	
)	
Application No.: 10/679,668)	
)	Group Art Unit: 1642
Filed: October 6, 2003)	
)	Examiner: Francisco Chandler Prats
For: ENZYMATICALLY MODIFIED)	
HYDROPHOBIC STARCH)	Confirmation No. 4079
)	
)	

PRE-APPEAL BRIEF REQUEST FOR REVIEW

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Dear Sirs:

Examiner Prats is thanked for his careful work in reviewing the present application and the cited references. For the reasons of record, which are summarized herein, the examiner is mistaken in maintaining the Section 102 and Section 103 rejections over the cited art. Applicants respectfully submit that the present application should proceed to allowance.

There are three cited references, and all of the claim rejections of record are based variously on the references. The references are Whistler, U.S. Patent 4,985,082; Kobayashi et al., U.S. Patent 5,445,950; and Aggarwal (Thermochimica ACTA 319:17-25 (1998)). Certain claims are rejected as allegedly anticipated by Whistler or Kobayashi; the remaining claims are said to obvious over various combinations of Whistler, Kobayashi, and Aggarwal.

The cited references are inapposite to the present patent application, and the claim rejections should be withdrawn. None of the references expressly teaches the claimed denaturing of an enzyme, and no reference teaches that a hydrophobic starch may be prepared in conjunction therewith.

In accordance with the principles that underlie the claimed invention, unmodified or cross-linked granular starches are treated with glucoamylase in aqueous solution. Upon such treatment, the pH of the solution is lowered to denature the enzyme. Surprisingly, this procedure yields a starch granule that is highly hydrophobic relative to starch granules that have not been so treated. As stated in the application and in previous responses, it is believed that this step --the lowering of the pH-- is responsible not only for denaturing the enzyme, but also for exposing relatively hydrophobic regions of the enzyme, thereby causing the formation of a starch/enzyme composite having a hydrophobic surface.

The cited Whistler and Kobayashi references, although generally directed towards treatment of starches with an enzyme, do not come anywhere close to teaching or suggesting the foregoing. Accordingly, the Section 102 and 103 rejections are both ill founded. First, Whistler is simply directed towards the preparation of a porous starch for the purpose of forming a carrier matrix for containment of an absorbate. Whistler fails to recognize the step of reducing pH to denature the enzyme (and hence fails to provide the mechanism for what applicants believe to be the exposure of a hydrophobic surface). In fact, Whistler teaches that the starches provided should be modified to absorb fatty or lipid substances:

If the substance to be absorbed onto and into the starch matrix has a predominant lipid character, the starch matrix can be treated to render the pore surfaces more lipophilic.... After such treatment, the granules, when dried, will take up liquids readily and will easily absorb fatty or lipid substances including oils and creams.

Column 2, lines 55-66. This passage suggests that the starches prepared by Whistler are not hydrophobic until such treatment (which, in retrospect, given Whistler's failure to teach denaturing the enzyme with acid, is not surprising). In any event, denaturing of an enzyme with acid is not taught.

The Kobayashi reference similarly is deficient, and teaches nothing about the denaturing of the enzyme. Moreover, Kobayashi in some places teaches to wash the starch (see Example 2), which conceivably would entail removal of portions of the enzymes from the surface of the starch granule (thus mooted what applicants believe to be the mechanism of action). Washing is not deemed to be excluded from the claimed invention, but the teachings of Kobayashi are nonetheless contrary to the invention. In any case, Kobayashi does not recognize the unique hydrophobic starch that is prepared upon following the procedure specified in claim 1, which procedure includes lowering the pH to denature the enzyme.

The Examiner acknowledges deficiency of both Whistler and Kobayashi in failing to disclose lowering of the pH. For this step, the Examiner relies on Aggarwal, but this reliance on Aggarwal is misplaced. Aggarwal recognizes the general proposition that enzymatic reactions may be stopped with acid, but does not expressly state whether the enzyme is denatured. The combination of references thus fails *ab initio* to lead to a Section 103 rejection. Moreover, the teachings of Aggarwal are divorced of any suggestion to combine the reference with Whistler or Kobayashi, and likewise are devoid

of any suggestion of the *result* obtained thereby. Accordingly, the reference cannot support the rejection.

To support the Section 103 rejection, the corpus of references collectively would have to suggest that, if the acid enzyme reaction stopping step of Aggarwal were applied to Whistler or Kobayashi, the reaction should be stopped such that the enzyme would denature. The references would further have to show that a hydrophobic starch would result therefrom. The references contain no such showing. In the first instance, it is not even clear that the enzyme of Aggarwal is denatured (only that the enzymatic reaction was stopped). Even if, in retrospect, it can be determined that the Aggarwal enzyme did denature, still Aggarwal fails to teach anything about the properties of a denatured enzyme or the possible effect on hydrophobicity of a starch. The result attained by the present invention -- a hydrophobic starch, believed to be caused by exposure of relatively hydrophobic areas of the acid-denatured enzyme-- is not disclosed or suggested by the references. This result is completely unexpected from a reading of the references. The result is even more unexpected when the contrary teachings of the references are considered (in Whistler, that modification is recommended before the starch is used to absorb lipids; in Kobayashi, that the treated starch should be washed). The existence of such a surprising result, in the face of contrary teachings of the references, is a hallmark of patentability,

In summary, the Section 102 rejections are poorly founded, because the starch prepared by the present invention is different from the starch of Whistler or Kobayashi. With respect to Section 103 rejections, the cited references, taken together, do not suggest the surprising result attained by the present invention. None of the reference expressly

teaches denaturing an enzyme with acid, nor do any of the references, alone or in combination, suggest that a hydrophobic starch thus could be prepared.

For this reason, withdrawal of the rejections is respectfully solicited.

Respectfully submitted,

Date: July 20, 2006

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